Chapter 11
Approaches and Initiatives to Green IT Strategy in Business

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ABSTRACT

Increasing resource consumption by business organizations is impacting the environment and resulting in changes to climatic patterns. The use of Information Technology (IT) and related systems are further contributing to sustainability issues and challenges within business. Hence it becomes imperative for enterprises to formulate their IT Strategies with green approaches in mind so as to reduce the environmental impact of their IT usage. This chapter discusses the issues and challenges in formulating such strategies with particular emphasis on architecture based approaches to green initiatives. A six step methodology for Green IT strategies for business is also recommended.

INTRODUCTION

Information Technology (IT) is an integral part of business in current environment. Increasing use of IT contributes significantly to the challenges of carbon emissions control within business. This chapter discusses the strategies and approaches an organization can adopt in terms of its IT usage that will help reduce carbon emissions, and is based on the doctoral research conducted by the lead author. The objective of this chapter is to understand the environmental issues and challenges in context of IT strategy and information systems. A review of relevant literature and discussion is followed by a six step methodology for Green IT strategies for business that also makes use of IT-based architectural approaches.

Table 1 lists various approaches to green IT. This list provides a comprehensive range of green IT initiatives that are focused on a specific aspect of IT and its relation to business.

Various IT Strategies and initiatives related to the environment are listed in Table 2. These initia-

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Table 1. Approaches to Green IT Strategy

Approach	Description
Data Center	Approaches focusing on optimizing the resource utilization in data centers (Aronson, 2008; Courses & Surveys, 2008; Forge, 2007; Patterson, Pratt, & Kumar, 2006; Przybyla & Pegah, 2007; Raghavendra, Ranganathan, Talwar, Wang, & Zhu, 2008; Sukinik, 2006).
Reuse, Refurbish and Recycle	Approaches focusing on reusing, recycling and refurbishing various components and equipments (Shevlin, 2008).
Tactical Incremental Approach	Approach focusing on incremental measures in IT Infrastructure (Murugesan, 2007).
Holistic Approach	Approach focusing on Green IT Policies in complete IT Lifecycle (Murugesan, 2008).
Architectural Approach	Approach focusing on making trade-offs and decisions at architectural level (Williams & Curtis, 2008)
Strategic Approach	Approach focusing on green strategic initiative as distinct from other strategic IT initiatives (Murugesan, 2007).
Deep Green Approach	Approach focusing on advanced green strategic initiative such as buying of carbon credits (Murugesan, 2007).
Total Sustainability Indicator Approach	Approach focusing on IT Architecture Framework with Sustainability View and Mathematical Modeling based on Game Theory (Goel, Tiwary, & Schmidt, 2010).

tives are a combination of government approaches and those undertaken by individual organizations.

The discussion below sets the scene for understanding the environmental issues in the context of business.

ENVIRONMENTAL ISSUES

Sustainability refers to meeting the needs of present generations without compromising the ability of future generations to meet their needs (Brundtland, 1987). Environment is one of the three pillars of sustainability, the other two being community and economy (Viederman, 1996). The improper use of resources brings environmental degradation and climate change such as flooding, droughts and storms etc., apart from endangering the already scarce resources available. Climate change is not only an environmental issue but also a business issue, since it affects business and markets (Hoffman & Woody, 2008).

Table 2. Initiatives in Green IT

Initiative	Run by	Started in year
Energy Star	US Environmental Protection Agency and the US Department of Energy	1992
EPEAT – Electronic Product Environment Assessment Tool	Consortium of Private and Public Agencies	2006
RoHS – Restriction of Hazardous Substances regulations	European Union	2006
WEEE – Waste Electrical and Electronic Equipment regulations	European Union	2006
Green Grid	Global Consortium of IT Vendors	2007
CSCI – Climate Savers Computing Initiative	Consumers, business and conservations	2007